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## Getting Safe Water and Sanitation to the Bottom of the Pyramid through Bold and Game-Changing Innovations

Accelerating Water.org's vision

by Hitendra Patel, Ahmad Ashkar, Sabina Ciminero,  
Tyler McNally, and Ronald Jonash

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*Water.org believes that new business models are needed to reach 100 million people in five years.*

As one coconut after another broke open next to shiny new water taps, cheers and laughter filled the steamy afternoon air with great festivity. Why the celebration? For the first time in their entire lives, the people of Annanagar slum in Hyderabad, India had quick-and-easy access to safe water—just minutes ago, clean water began flowing, crystal clear, from taps installed right outside of their homes (taps and connection fees they had proudly paid for with a “WaterCredit” loan).

WaterCredit has been a breakthrough innovation of non-profit Water.org and is on a path of exceptional growth towards reaching 10 million people over the next five years. However, co-founders Gary White and actor Matt Damon see this as representing just a tiny sliver of the one billion people lacking access to safe water and the more than 2.5 billion individuals without basic sanitation.<sup>1</sup> They envision the day when everyone in the world can take a safe drink of water and experience the dignity of a toilet. “We need to keep pushing the envelope and look at bigger and bolder solutions that will further accelerate our reach from today’s potential of 10 million people to 100 million people in five years,” said Gary.

Walking back across the lane of silver-colored water taps, Gary stopped and turned to Matt: “We are living in amazing times where industries such as telecom, education, and banking are penetrating the Bottom of the Pyramid (BOP).<sup>2</sup> If we want to move beyond helping just 10 million people in five years, we need to push harder and move beyond WaterCredit.

How can we ‘crack the code’ on getting safe water and sanitation to the Bottom of the Pyramid, as quickly as possible, reaching at least 100 million people in 5 years? What will the solutions be? Will they include leveraging business models found at the intersection of other industries? Will they include empowering people at the BOP to hold their governments accountable to deliver on their water and sanitation needs? Will they include exploring franchise solutions for entrepreneurs at the BOP who can find ways to deliver water profitably? What will be our next big game-changers?”



*A little girl's face said it all—a look of strength and seriousness beyond her years—as she bent down to dunk a bright orange-colored jug into an old rusty barrel of polluted water. Tilting the jug on its side, she waited patiently for the moment the murky water filled to the very top and then, as she had done countless times before, strained to lift it back up into her arms. After regaining her balance, the little girl turned toward a dark stream of open sewage and trudged back down the beaten path to her family's shack, her tiny image slowly fading into the distance...*

*“At that moment, I knew my life was going to be about bringing safe drinking water and sanitation to people living without it,” said Gary White.*

*This “moment” dates back to Gary's undergrad days in 1984 when he visited Guatemala with the volunteer organization of engineering students that he had founded at University of Missouri-Rolla (now called Missouri University of Science and Technology).*

### “Where is the water?”

*Today, a group of Haitian women and girls in Port-au-Prince gave up on waiting for the local water truck to arrive at their slum's street corner. They had been standing in line with their jugs for over two hours with no truck in sight and no clue as to when the next one might decide to appear. Instead, they embarked on their usual alternate plan: a 45-minute round-trip trek past the outskirts of the city, through a grassy trash-laden field, and finally up to a creek of brown water and floating garbage. As they dipped their jugs into the murky water, a black-haired pig just a few feet away urinated and defecated into the same creek.<sup>15</sup>*

### “When will it arrive?”

*A quick ten-minute walk to a nearby water standpost for Mrs. Kolanchi and her three daughters morphs into an hours-long process of waiting and waiting—the line does not even begin to move until the water flows, and nobody is ever quite sure if and when that might happen (in one hour, two hours, three...?). Luckily, Mrs. Kolanchi's daughters attend school, but their studies are hurt when they have to miss classes in order to collect water. They wish they could focus on school rather than worry about collecting water.<sup>16</sup>*

## Overview of the challenge

### Clean water and sanitation is an issue for over a billion people

Water is life. It is a plain and simple fact that we all need to drink safe (disease-free) water in order to survive. And yet for too many people in the developing world, water is death: about 3.5 million people are killed by water-related diseases each year, 98 percent of which live in developing countries. Something as preventable as diarrhea is the second biggest killer of children under the age of five, with about 1.5 million kids dying each year and one child losing a life every 20 seconds.<sup>3</sup> About 84 percent of the victims of water-related deaths are children.<sup>4</sup>

Approximately 1.1 billion people lack access to clean water, and more than 2.5 billion people lack access to safe sanitation.<sup>5</sup> In the developing world, individuals often spend about 5–6 hours per day walking to water sources and waiting in frustratingly long lines. Together, an astounding 200 million hours is dedicated each day to the pursuit of water that is oftentimes murky and disease infested.<sup>6</sup>

By trading the time spent looking for water with work and school, adults and children would dramatically improve their productivity and contributions to society. By 2015, members of the United Nations have pledged to meet various Millennium Development Goal (MDG) targets for international development – one of which is to cut in half the number of people lacking access to safe water and basic sanitation. It is estimated that the world would enjoy USD38 billion/year in economic benefits by achieving this goal.<sup>7</sup>

### Water.org wants to focus on getting clean water and sanitation to Urban and Peri-Urban regions<sup>8</sup>

Lack of clean **water** and basic **sanitation** (“watsan”) is a way of life for most people residing in the slums of big cities throughout the developing world. Some live in urban areas located right in the city, while others inhabit peri-urban areas (situated just beyond the confines of a municipality where people do not pay taxes and the government is usually not responsible for providing public services). As increasing numbers of people migrate over from rural areas, already densely populated cities are becoming even more crowded.<sup>9</sup>

A slum home, whether in an urban or peri-urban area, is typically a small single room made of scrap materials such as corrugated tin, plastic sheets, and pieces of plywood. An entire family of parents, grandparents, and children squeeze into tight quarters, sometimes as many as eight or so people. One shack after another is tightly packed in, leaving little space between them. Outside, a chaotic sea of people on foot and in human-powered or motorized vehicles make

their way down narrow dirt lanes. The air is loud and full of hustle-and-bustle and has a difficult-to-bear stench from nearby open sewers and trash heaps.<sup>10</sup> Rain covers unpaved paths in puddles and melts sewage from hilltops down into people's dwellings. Cholera outbreaks, typhoid, and skin and diarrheal diseases are widespread.<sup>11</sup>

By mid-2009, the world hit a “tipping point” and the beginning of the “Urban Millennium,” with more than 50 percent of the world living in urban communities vs. rural regions, and projected to “tip” further to about 69 percent by 2050. The developing world is expected to be the home of 93 percent of urban growth, with over 80 percent in Asia and Africa.<sup>12</sup>

### Women and girls suffer disproportionately from water and sanitation issues

In almost all of the urban and peri-urban areas of the developing world, it is the role of women and young girls to collect water for their families. These same women and girls also encounter a range of issues around sanitation.<sup>13</sup>

### Issues with getting affordable, clean water

#### Looking for water: “Where is the water?”

The search for water literally becomes a sort of “scavenger hunt” for women and girls. Uncertainty rules the game and leads to massive losses of precious time that could be spent working or attending school. Depending on their location, women and girls have two basic places to find water: community standposts (faucets about three feet above the ground) and water trucks located in the slums, or in nature on the outskirts (creeks, rivers, etc.). Standposts are scattered erratically throughout slums, and tanker trucks stop at designated places. First, women and girls often try collecting water at the standposts or trucks. If they are not successful there, they resort to walking further out to open water sources, such as a pond.<sup>14,15</sup>

#### Waiting for water: “When will it arrive?”

Women and girls spend multiple hours a day waiting for water trucks to arrive or standing in long lines at water standposts. It is not clear when water trucks might finally appear at their various stops, so women and girls must be patient.

In India, community standposts are shared by dozens of families. Women and girls only need to walk about 15 minutes or so to reach one. However, once there, they might have to queue for hours in the hot sun waiting for the water to finally turn “on” and for their turn in line. The water flow is not dependable and can be quite erratic, sometimes only coming randomly just once a day for an hour, or worse yet, not at all.<sup>16</sup>



As fear mounts that they might not be able to get their much-needed water before the standpost turns back “off,” fights sometimes erupt and women and girls get hurt. In other cases, women and girls leave their empty jugs in front of the community standpost and sometimes even sleep by them the evening before the water is to be released, to secure a place in line.<sup>17</sup>

*Bringing home low quality water: “I don’t know if the water is clean or if it will make me sick.”*

While each of the ways in which women and girls collect water is different—whether from a murky river or creek, a community standpost, a water truck, or a private vendor—one common characteristic of the water itself is its questionable quality. The end result is sickness, poor health, time loss, and lost opportunities for older members of the family to work and kids to attend school.

### Issues with getting access to sanitation

In addition to their water collection difficulties, women and girls face great challenges in another basic component of life: going to the bathroom. Since this topic is viewed as too private and uncomfortable to discuss, it tends to be a silent issue. Once again, their options are beyond unpleasant and, unfortunately, share common characteristics: they are unsanitary, unhygienic, and dangerous.

### Lack of facilities

The majority of slum dwellings do not have toilets. Finding an outside toilet is often an impossible task. Even if you had a stroke of luck to run across one within a 10–15 minute walk, you may soon find yourself still very much out of luck. Take a slum in east Mumbai, India, for example—there are 18 toilets for about 50,000 inhabitants (8 for women, 10 for men). And you have to pay 2 rupees (4 cents) to use them. Most residents cannot afford to pay the fee, but for those who can afford it or really value the privacy, they often end up waiting for an hour for toilets that are usually unhygienic.<sup>23</sup>

*“Holding” all day to relieve themselves only at night*

Sharing a crammed room with a half dozen other family members and no toilet does not allow for many affordable options for privacy when nature calls, aside from going outside. For cultural and modesty reasons, women and girls wait until dark to walk to open areas at the outskirts of the city, such as railroad tracks and riverbanks – privacy at the risk of being bitten by snakes and attacked by unscrupulous men. “Holding” is not only uncomfortable but also unhealthy with many side-effects. This is further exacerbated when a girl or woman is sick with diarrhea or other stomach illnesses. Feelings of shame are shared by women and girls as they yearn for the privacy, dignity, and convenience of a toilet.<sup>24,25</sup>

### “Do I have enough water?”

*Mrs. Manonmani cannot walk to a water post every day – a “solution” to try to stop fights in the lines led to a rule only allowing the communities sharing the standpost to access water on alternate days. As a result, she can only use the water post a mere once every four days. Providing for the water needs of a family of four with such infrequent trips to the standpost is simply not possible. In a desperate state, she has to wait to see if neighbors might be willing to sell her any extra water they may have (one rupee buys her family four pots of water). Untold time spent walking from neighbor to neighbor in search of water (and waiting in lines on days she can actually use a standpost) leaves Mrs. Manonmani unable to care for her children as much as she would like, and unable to work and earn an income for her family.<sup>20</sup>*

*Storing enough water between filling up: “Do I have enough water?”*

Despite the many hours spent collecting water each day, women and girls find it difficult to gather a sufficient amount for their entire families’ needs. There are two issues—the first is the difficulty of carrying water across long distances, and the second is the restrictions placed on the maximum amount of water permitted to be collected each day.

In many parts of the world, women and girls might carry the water by balancing a vessel on their head, strapping a jug to their back, or carrying a vessel in their arms. Unfortunately, water is heavy and cumbersome to carry—the most a woman or girl can haul at a time is around 40–50 pounds (about 18–23 kg). Given these physical limitations, multiple water collection trips are made each day.<sup>18</sup>

But even if such difficulties did not exist with the transportation of water, there are strict limitations on the number of water vessels or jugs that can be filled each day. Slums in India allow no more than five vessels of water per person. Even if long lines did not prevent women and girls from gathering their full allotment, they would still likely not have enough water for bathing and washing dishes and clothes (such tasks are done in rivers and other water sources that tend to be polluted). In some communities, water only flows from public taps once every few days. And so women and girls need to collect and store a few days’ worth of water or beg their neighbors to sell them spare water.<sup>19,20</sup>

*Paying Too Much: “How will I pay for this water?”*

The world’s poorest people are actually paying more for water than the middle class and wealthy who have municipal water connections. Oftentimes, they purchase water from private vendors known as the “water mafia,” at prices that are up to ten times higher than the cost of water provided through public water systems. Even worse, they are paying premium prices for water that is not even safe to drink. Exploiting a market created by the absence of public sector providers, the water mafia uses its influence to get government officials to “look the other way.”<sup>21,22</sup>

### “How will I pay for this water?”

*Each evening between 7pm and 10pm, “local goon” Ravi Anna can be found by the railroad tracks behind the Dharavi slum of Mumbai, India. There he sells stolen water for hefty fees to desperate slum dwellers. While other members of the water mafia might illegally tap into public water pipes, the source of Ravi’s water is a nearby tank owned by the Indian Railways. Verbal and physical attacks break out in the line, creating a panicked scene of people hurrying to fill their jugs from the tank’s spigot and paying Ravi.<sup>22</sup>*

### “Walking at night to open areas is terrifying.”

*“We have to use the open areas, the riverbanks, for defecating. It is very embarrassing to sit in the riverbank. When men pass by it is difficult.”*  
– Nagammal, a young girl from Tamil Nadu, India<sup>25</sup>



### **In Africa's biggest slum of Kibera:**

*"Some say half a million people live there. Others put the figure at more than a million.... Kiberans live in tin shacks or mud "houses" with no toilets, no beds and little water to speak of. Electricity is almost non-existent... Children play on the heaps of bags of 'flying toilets.'"*<sup>26</sup>

### **"No privacy and public humiliation."**

*Fearful that the boys would tease her if her uniform got stained, Mbeti of Kenya skipped school during the week of her menstruation. These school days missed by Mbeti and other fellow girls add up to over one month of the year and represent a tremendous academic setback.*<sup>28</sup>

### *Disposing "personal" waste in public areas*

Since many of the pit latrines are overflowing and barred from use, some people opt for defecating into plastic bags called "flying toilets," which they later toss into heaps on the street.<sup>26</sup> These "toilets" are especially helpful in situations such as when illness strikes, making it difficult to leave home, or when it is still light outside and women and girls cannot wait until the sun sets to go out to relieve themselves. Efforts are made to dispose of these "flying toilets" in discrete areas like tops of roofs and back alleys. Unfortunately, this waste eventually infringes on the boundaries of day-to-day living and locations where children play.

### *Using latrines that lack privacy*

If you are a lucky girl who can attend school and luckier even still to attend a school with toilets, you may still find yourself out of luck when your period begins. Oftentimes, school latrines have boys' and girls' toilets together. And so, it is quite difficult for adolescent girls to find the privacy they need to do things like change their sanitary napkins (or makeshift ones of cloth). Girls in many parts of the world chose not to go to school to avoid embarrassment or humiliation while having their period.<sup>27,28</sup>

## **Current solutions will not get us there**

With awareness on the rise, more and more individuals are finding it difficult to turn a blind eye to the severe suffering caused by the global water and sanitation crisis.

Over the past 30 years, thousands of non-governmental organizations (NGOs) have cropped up aimed at helping solve the crisis. Still, despite the fact that clean water often lies just 30 meters below their feet, one in eight people are unable to obtain clean water, one in four people do not have a toilet, and the number of people who die from water-related diseases is greater than those who die in wars. At a time when more people in the world have access to a cell phone than to a toilet,<sup>29</sup> there are still a range of reasons why we cannot solve the issue of getting people access to safe water and sanitation.

### *Watsan is not attracting enough funds*

For whatever reason, other issues like AIDS and climate change have raised far greater awareness and associated funding.<sup>30</sup> Commercial capital has stayed on the sidelines of an unfamiliar and seemingly risky water and sanitation market. Similarly, "water and sanitation have a weak voice in government" and, as a result, compete for funds.<sup>31</sup>

### *Government watsan funds do not get to the endpoints due to corruption and lack of accountability*

Of the funds raised, an estimated 10 to 30 percent of them are lost to corruption and poor execution. There is little transparency around funds committed, projects initiated, and progress made. As a result, community groups or individuals struggle to participate in this process, even though they are supposed to be the beneficiaries. Addressing this issue could free up to USD4.8 billion/year.<sup>32</sup>

### *Philanthropic cost per beneficiary is not improving*

Philanthropic capital is funding provided by private individuals and organizations, such as NGOs and foundations. Across the watsan space, the effectiveness of grant-based work is flat. At Water.org and at many other similar organizations, the philanthropic cost/person has been stuck at USD40 over the past decade. Philanthropic cost/person is defined as the cost required to set up one person to get access to water or sanitation for a person's lifetime. This number fluctuates slightly by geography and technology used to get water or sanitation to each person.<sup>33</sup>

It is anticipated that these access costs will rise over time as new people who are helped live in increasingly more difficult-to-reach locations. Such a headwind will put additional pressure on raising philanthropic capital in the future.<sup>34</sup>

### *Novel technologies are not effective*

Projects that can be maintained using local skills and local parts tend to be more successful. Unfortunately, many organizations fail to teach local residents how to operate and maintain their newly installed infrastructure (such as a well) —so after they leave communities, the well gets neglected and eventually becomes useless, a mere temporary fix. This is especially true in cases of high-tech solutions that are too complicated and expensive to maintain without funding and distribution networks for spare parts. As a result, the "bang for the buck" of these organizations' donations is nowhere near its potential.<sup>35</sup>

### *Far too much siloed thinking within the watsan space*

Why have NGOs hit a wall blocking them from success in combating the water crisis? Unfortunately, the watsan space has been stagnant over the past couple of decades — no real innovations, a relentless dependence on philanthropic capital (charity), and a severe case of short-sightedness that only tends to look for solutions within its own watsan space and not in other industries to learn from their business models. While well-intentioned, many water and sanitation projects fall apart in the first several years, with about 50 percent of projects no longer functioning today.<sup>36</sup>



### **Loan sharks who prey on those who want to pay for clean water and sanitation.**

*The stress caused by loan sharks almost drove Mrs. Indirani to suicide. But thankfully at the last minute her husband was able to stop her from lighting a match to the kerosene she had poured over her head.*

*Back in 1997, without his wife knowing, Mr. Indirani borrowed 17,000 rupees (USD375) from a private money lender who charged an initial 48 percent interest rate and demanded his house as collateral. As each year passed by, the interest rate rapidly rose to 150 percent and over, preventing Mr. Indirani from making any headway in paying off his loan—instead his debt grew ever higher. Eventually he had to sell his acre of land worth USD771 (nearly twice the original loan amount), and yet even still the principal value did not budge an inch.*

*Early in the morning, harassing shouts filled the air as moneylenders stood in the street right outside their house threatening to take it. Sadly, these threats soon came to fruition and they lost their home.<sup>39</sup>*

### *Unfair financing from loan sharks*

Microcredit is emerging, but loan sharks continue to have a field day gouging the poor at 100 to 200 percent interest rates for loans taken out in a desperate attempt to get connected to a public water source.<sup>37</sup> As interest rates quickly ratchet up over time, borrowers begin to realize that no matter how hard they try, they may never be able to repay their loans. Money lenders are relentless in harassing borrowers and are known for suddenly showing up at homes and taking possessions for “payment” (such as a cow) that might be worth more than three times the value of the loan itself. Despite such blatant unfairness, poor women tend to keep quiet as they may feel intimidated next to the wealthy loan sharks and frightened by their potential violence.<sup>38,39</sup>

If markets were not failing like this, financial players would be able to see the poor’s USD12 billion in pent-up demand for small and affordable watsan loans. Such microfinance loans would be used to provide them with connections to safe water and sanitation (representing about 300 million people). These facts point to the urgent need for new and innovative solutions that go beyond the conventional charity model and help jump start markets that can bring in new commercial, social, and civic capital.<sup>40</sup>

### **Water.org created WaterCredit<sup>41</sup> as a new way**

In 2003, Gary White pioneered WaterCredit after an “aha” moment realizing that:

*There are poor women whose time is quite valuable and who are already paying for water (with their collection times or overpayments to loan sharks and water vendors). These women can be reached with solutions that are economically viable. They can work and generate money and do not want just a “hand out.” These women are highly motivated and strive for a better life for their family so that their daughters can attend school (rather than spend the day on water collections) and everybody is healthier.*

### *What is WaterCredit?*

The microfinance institution (MFI) disburses watsan loans to a community’s “self-help group” (SHG) that then distributes the funds to the individual borrowers. The average loan is about USD130/person, with 10 to 24 percent annual interest rates (vs. 100 to 200-plus percent annual interest charged by loan sharks) to be repaid within 12 to 24 months. Repayments go into a revolving fund from which new loans are made to new people again and again. Monthly payments based on usage are made to the water utility. While no economic collateral is required, “social collateral” puts pressure on SHG members to pay back the loan (if a member fails to pay, other members become responsible for payment). As

a result, women are careful to form SHGs with other women with whom they have developed a strong bond of trust. WaterCredit’s 98 percent repayment rates point to the power of peer pressure and having “skin in the game.”<sup>42</sup> In turn, the risk to MFIs is lightened and they feel less wary about entering the mysterious watsan space.

Water.org’s “smart subsidy” further alleviates an MFI’s risks by helping with its start-up costs, such as those required to develop a new watsan loan product, assess the watsan market, educate/train employees, and build capacity. Sometimes Water.org also provides MFIs with such credit enhancements as guarantees and standby letters of credit.

Water.org’s budget for 2011 is approximately USD7 million. Of the 75 percent of these funds dedicated to project/service work, about 78 percent goes towards supporting WaterCredit and the other 22 percent is used for grant-based projects aimed at helping people whose poverty levels are too extreme for engaging in a loan. The more WaterCredit succeeds in helping people who can afford reasonable loans, the more it frees up traditional philanthropic capital for grant-based work for those people who really and truly need it.

And so, WaterCredit was the solution to this conundrum of too much wasted time in pursuit of a poor quality and overly-priced product (low efficiency and effectiveness). WaterCredit leverages these poor women’s already-demonstrated willingness and ability to pay for water, translating it into borrowing money at affordable rates to pay for household water connections and toilets. As a result, it monetizes time. For the first time in history, the microfinance world is uniting with the watsan world and beginning to fill a gap of pent-up opportunity.

### **Getting commitments from all stakeholders has been a key to WaterCredit’s success**

#### *Working with microfinance institutions (MFIs)*

While microfinance institutions had been extending small loans for decades, they were only intended to support income-generating activities. Water connections and toilets were not considered money-making ventures. Broadening their portfolio of offerings into the watsan space was a game-changing step forward towards solving the crisis. With the vast majority of their clientele made up of women and the collection of water primarily a woman’s responsibility, MFIs were a natural fit.<sup>43</sup>

## Gary’s “aha” moment

### **“Business opportunities spring from the water itself.”**

*S. Gandhamani of Tamil Nadu, India, is channeling wastewater to her long-neglected garden in which she recently planted banana trees. The sale of these bananas augments her yearly income by five weeks of wages.<sup>43</sup>*



**“WaterCredit transformed my life and the lives of my family. Now we are happier, healthier, more productive and our dignity is restored.”**

- Gowrammal is pleased that her new household toilet has brought an end to her horrid daily choice between the embarrassment of open defecation or exposure to unhygienic latrines.<sup>45</sup>
- Mbeté no longer misses school during her period now that the latrines have separate areas for boys and girls at her school.<sup>46</sup>
- Juhanara’s new water tap allows her to get the water she needs for her family in just minutes vs. hours. Her family suffers from fewer water-related diseases, and she can spend her freed-up time either caring for her children or working.<sup>47</sup>
- Mrs. Manonmani is also now able to spend more time taking care of her children and home and working as a tailor. She is making extra money by selling spare water to her neighbors.<sup>48</sup>
- Mrs. Kolanchi’s daughters no longer have to disrupt their studies for water collections.<sup>49</sup>
- Mrs. Indirani became a leader, encouraging her fellow community members to invest in WaterCredit loans to construct toilets. On January 26, 2011, her village was acknowledged as free from open defecation.<sup>50</sup>

**“WaterCredit helped to make my life safer and less full of fear.”**

Jeyarani and Vadugaputty no longer worry about being attacked while waiting in water collection lines – they both have their own household water connections. Vadugaputty also got an Ecosan toilet:

*“Whenever I see the scars on my body, I remember the problem I faced in collecting water from the public tap. If the individual water pipe connection had come to our village earlier, I would not have this scar on my body. I would have never dreamt that we could get these facilities on our own, so we are thankful for Water.org and SCOPE [NGO].”<sup>44</sup>*

Water.org had to spend endless hours meeting with MFIs to introduce them to this pioneering concept of WaterCredit and the power of building a partnership together. At first, many MFIs looked at Gary as if his idea was ludicrous, but his perseverance began to get buy-in one by one as the combined social benefit and money-making value of the concept grew increasingly clear.

WaterCredit’s growth mirrors that of the MFIs. The majority of its projects are based in Bangladesh and India since these countries are home to the world’s highest concentration of MFIs. For a project to move forward, it must be in an area with both a strong nearby MFI and a water or sanitation infrastructure into which it can build a household connection; such infrastructures are usually found in urban and peri-urban locations vs. rural areas.

### Working with donors

On the donor side, interest in Gary’s revolutionary concept has been gaining traction as well, with grants from the Open-Square Foundation and the Michael & Susan Dell Foundation to support pilot projects in Bangladesh in 2003, India in 2004, and Kenya in 2005. Declared commitments have been instrumental in driving WaterCredit forward at an accelerated rate. Recently, for example, PepsiCo Foundation provided USD4.1 million to reach more than 150,000 people in India with safe water and sanitation over a three-year period.

### Working with Beneficiaries

Under its bottom-up approach, demand must first originate from the people themselves who will be taking on the loans to fund their purchase of a water connection or toilet. Unlike many NGOs, Water.org never takes a top-down approach of entering a community on its own. Residents voice their needs for safe water and sanitation to a local NGO.<sup>44</sup> Water.org partners with the NGO and a MFI with a presence in the community. “Certification” of both the NGO and the MFI is required before Water.org moves forward on any project.

Water.org carefully screens potential partners through a robust and exhaustive list of customized criteria, such as the NGO’s track record in implementing watsan projects and the MFI’s financial and operational performance history. After certification, performance is continually assessed to ensure strength is sustained at levels necessary for a continued partnership.

Self-help groups (SHGs), made up of women in the community and interested in getting WaterCredit loans, are formed and trained. Each SHG has about 10 to 12 members, with an elected president, treasurer, and secretary. Water.org’s “smart subsidy” provides funds for the health and sanitation training of SHG members,

who then educate fellow residents regarding the connection between clean water/sanitation and health. More and more people demand for WaterCredit loans as their awareness is raised regarding how unclean water and poor sanitation are needlessly making them sick and killing their family and friends. Children also serve as “health advocates,” helping to teach their schoolmates and parents about the importance of clean water and sanitation.

To date, a slew of case studies of successful interventions have been generated.<sup>45,46,47,48,49,50</sup>

### Projects that Last

Project sustainability requires that Water.org stay engaged with the community at every stage of the project from initial community involvement to financing, construction, and training for ongoing maintenance and operations. Water.org’s goal is to eventually leave a project site, but rather than leaving the people in the dust, it leaves them empowered with the skills needed to continue the project independently.

It is “technology agnostic,” not wedded to any one water connection or sanitation technology. Rather, the type of equipment is determined by the environmental requirements of the project site and the types of nearby, easily accessible materials from which replacement parts will be sourced. Its “smart subsidy” provides training to educate SHG members on how to operate and maintain their new equipment as well as training on the importance of basic hygienic and sanitary behaviors. The logic is that access to safe water and sanitation can be useless to people if they do not wash their hands regularly and practice other important hygienic behaviors.

### Outlook

Future plans for WaterCredit 3.0 may include innovative ideas to help finance larger watsan investments whose size would be too big for MFIs (such as micro-utilities and small water-and-sanitation-related businesses).

In the meantime, WaterCredit 2.0 has expanded into Kenya and Uganda. One challenge is balancing downstream opportunities (potential projects) with upstream constraints (limited capital). As a result, projects sometimes have to wait until there is sufficient capital to support them. About USD2.3 million has been invested in WaterCredit programs, leveraging more than USD5 million in external capital. Approximately 32,000 loans totaling USD3.4 million have benefited close to 245,000 people. WaterCredit continues to grow at an accelerated rate, with success breeding success.

WaterCredit’s philanthropic cost per beneficiary has been on a steady decline from USD100-plus and is approaching USD10 per person in many



areas. In contrast, traditional grant costs have remained stagnant at USD40/person. Therein lies the beauty of WaterCredit—it relies less on charity dollars and instead spurs sustainable growth in commercial capital (freeing up traditional grant charity for those who really need it and cannot afford a loan). In fact, three dollars of commercial and social capital is attracted for each philanthropic dollar used by WaterCredit. And as each borrowed dollar is repaid, it can be re-lent again and again.

### **But, WaterCredit is not enough—there has to be a better way**

WaterCredit is only part of the solution that needs to rapidly bring safe water and sanitation to 100 million or more people within five years. Faced with the challenge of finding other complementary business models that he could borrow and adapt, Gary was having a familiar feeling—like how he felt back in 2003 before pioneering WaterCredit. Once again he was searching for a game-changing solution that would be a breakthrough in accelerating Water.org’s reach. And once again, the feeling pushed him to look outside of the watsan space. As WaterCredit was a revolutionary idea located at the intersection of two industries (microfinance and watsan), Gary’s hunch was that the next breakthrough was an untapped business opportunity sitting at another industry “intersection” point. And so he is now in the midst of investigating what other industries are doing to penetrate the Bottom of the Pyramid (BOP).

A revolution is spreading across other industries as they develop innovative ways to penetrate the BOP. In the telecom industry, for example, mobile phones are reaching hundreds of millions of the world’s poorest people who would have never been considered “customers” in the past. New business models for serving the BOP spring to life each day as cell phones are used in creative, never-before imagined ways: as mobile banks and information communication systems.<sup>51</sup>

Through the development of new business models, many other industries such as education, healthcare, insurance, and financial services are reaching the BOP. In fact, people who are actually living in the BOP are building businesses that generate profits by serving the BOP itself. Many future solutions aimed at reaching the “last mile” will occur at the intersections of these models and others. A review of learnings from other industries may help generate insights to solving the challenge of getting safe water and sanitation to people.

### **Learnings from other industries**

#### *BOP is profitable*

Driven by high profit margins on low unit sales, mobile phone companies are penetrating deeper and deeper into the BOP.<sup>52</sup> More people in the world have access to cell phones than to toilets. By the end of August 2010, people in India had more than 670 million connections, growing at a rate of about 20 million new users per month.<sup>53</sup> Companies like Reliance in India, Wizzit in South Africa, and Safari.com in Kenya are finding ways to profit from the BOP.<sup>54</sup>

Women from local community “self-help groups” are serving as Unilever’s sales force in India, educating other women about the importance of cleanliness and selling Unilever’s personal care products directly to them. Its Indian subsidiary, Hindustan Lever Limited (HLL), developed profitable products at prices affordable to the poor (such as small plastic sachets of shampoo rather than more expensive bottles).<sup>55</sup>

#### *Social relations can be used to collateralize loans for the poor*

The BOP is proving wrong the long-held conventional belief that it is too risky to lend to the poor. On the contrary, the poor are willing and able to repay their loans (there are about 300 million individuals with USD12 billion of pent-up demand for watsan loans between now and 2015). The numbers speak for themselves at Grameen Bank with its microfinance loans and at Water.org with its WaterCredit program: 97 to 98 percent repayment rates. Moreover, the BOP is demonstrating that other means of collateral can be used beyond economic assets. In small group loans with family and friends, reputation becomes a powerful form of “social collateral” (people risk losing the trust and respect of those closest to them if they fail to pay). The power of peer pressure helps to ensure reliable repayment.<sup>56</sup>

#### *Units of services / products are able to be divided beyond what was thought conventional*

In the developing world, a single cell phone or household water tap can go a long way towards providing benefits to small groups of people rather than just one person. While the idea of sharing a phone with others would likely seem nonsensical in the U.S., such arrangements are proving ingenious at the BOP. In fact, entire communities can benefit from a single mobile phone. The Grameen Foundation has been acting on such an opportunity through its “Village Phone” initiative, which has already created 25,000 micro-franchises in Asia and Africa (Village Phone Operators charge people a fee to use their mobile phones).<sup>57</sup> Following a similar line of logic, a household’s water tap can prove beneficial to others living outside of the home, thus creating a business opportunity for people to sell spare water to their neighbors who do not have water connections.<sup>58</sup>

### *Right-size the solution*

It is important to zoom in on the specific needs of the people being served and customize solutions around those needs; however, sometimes less is more. In the telecom space, companies are right-sizing their services to the BOP's need for quick-and-easy communication at the cheapest price possible. Globe Telecom in the Philippines is making use of "sachet marketing" that empowers customers to purchase phone minutes in their own personalized allotments, rather than be restricted by standardized, pre-set values – "you only buy what you need, when you need it." As a result, customers can "package" their own service plans as they deem fit, and only pay for services that they plan to use, when they plan to use them (a combination of voice and cheaper text messaging, only text messaging, etc.).<sup>59</sup>

Keeping things cheap and simple has been a key to success for the One Laptop per Child (OLPC) initiative. Its vision is to provide all 2 billion of the developing world's children with their very own laptops to help "revolutionize how we educate the world's children" (1:1 computing programs). OLPC's laptop had to be sensitive to the needs of both the user and the purchaser – kids' need for something fun and easy to use and developing countries' requirement for an affordable, low-cost computer. With access to electricity oftentimes a challenge in the developing world, it also had to be able to run on little power. The solution was to deliver a laptop computer (the "XO") that was priced less than USD200, with features quite different from sophisticated Western standards—a rugged, low-power laptop requiring less than two watts of power and able to run on human-generated and solar energy sources (conventional laptops require 90 percent more power). On October 13, 2009, Uruguay succeeded in providing every one of its public school children (between 6 and 12 years of age) with a free laptop through its purchase of around 400,000 XOs.<sup>60</sup>

### *Having local parts and local knowhow*

The most sophisticated and advanced innovation is not necessarily the best solution. In fact, sometimes it may lead to an assured failure. "Incubator graveyards" in the developing world's hospitals are an unfortunate example: thousands and thousands of generously donated state-of-the-art baby incubators sit around useless and collecting dust. The combination of expensive high-tech sophistication (USD40,000-plus per incubator) and highly specialized parts drags them down to their eventual doom—nobody knows how to fix them and nobody can afford or access the required parts anyhow. One idea

for a solution is to build a 4Runner for Babies incubator made from Toyota 4Runners, which can be easily found throughout the Third World. Cheap, "organic resourcing" would use the Toyota's headlights for heat, its air filters for air purification, and its car alarm to warn of emergencies.<sup>61</sup>

Sophisticated electric and solar pumps or high-tech water treatment devices in developing countries also fall victim to their high-tech complexity. While they may work great at first, many times local people using the equipment are not skilled in how to maintain it and so when a problem arises, the pump or device gets put completely out of commission. Water.org has a "technology agnostic" approach just for this reason – sourcing parts from the local project area so that they are easy for the people to access, and then educating them on how to operate and maintain the equipment for the long-term.<sup>62</sup>

### *Information exchange saves time and generates profits*

Something as easy as a quick cell phone call can provide people with invaluable information that leads to time-saving and profit-generating decisions. With the onset of mobile phone coverage in 1997, fishermen in Kerala in the south of India saw their businesses thrive. Prior to 1997, they threw away 5 to 8 percent of their perishable catch when their home market was oversupplied and there was not enough demand for the day. But now with a cell phone in hand, in just a matter of minutes, fishermen can call several markets from their boats and head over to the one offering the highest prices. Eventually the varied price of sardines along the coast settled down to a single price, creating a more efficient market that drove fishermen's profits up by about 8 percent and consumer prices down by about 4 percent. As development economist Robert Jensen of Harvard University said: "Information makes markets work, and markets improve welfare."<sup>63</sup>

### *Information enables holding people, not organizations, accountable*

With increasing worldwide use of the internet and social media sites such as Twitter and Facebook, informational transparency and personal accountability are on the rise and the world, in effect, is becoming "smaller." In Iran, protestors of the 2009 Iranian presidential election used Twitter (and other social media sites) so much to communicate their message that their demonstrations became known as the "Twitter Revolution."<sup>64</sup>



They believed that the election had been rigged so that Iranian President Mahmoud Ahmadinejad would win—the entire world was watching and listening together on the web. The issue of potential fraud in the election remains unresolved. Just as Iran had turned “off” people’s access to the internet and cell phones for a few hours during the election, in January 2011, as revolution approached in Tunisia, former President Zine el-Abidine Ben Ali blocked people from accessing thousands of political websites. But such measures proved ineffective as the President was soon ousted by his people. And even more recently in February 2011, President Mubarak was forced to resign as a result of protests which were enabled by technology that empowered the masses. An attempt to disconnect his people from accessing communication was unsuccessful.<sup>65</sup>

### *Solutions will come from new and non-traditional players*

One common theme shared by the previous examples is that the people driving the innovative solutions forward tend to be small trailblazers and not big, established companies. They are on the ground and understand the issues much better than a large company that is too far removed from people’s day-to-day lives. Oftentimes, they are intimately familiar with the needs of the people since they are of the people themselves, thinking of new ways to make their lives better—innovation springs from their own needs.

Kiva.org is an example of one such company that is linking individual lenders with poor entrepreneurs located in the developing world. It is raising money in new ways and identifying individuals on the ground with local solutions and a business opportunity.<sup>66</sup>

Certainly, these examples are just a few of the many ways innovative solutions are reaching the BOP. There are many others happening in the BOP each day. It would be interesting to connect some of these innovations in new ways to create sustainable solutions for water and sanitation.



### Endnotes

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At IXL Center, Hitendra works with firms and their executives to develop the institutional capabilities and culture that foster growth through innovation. He is also a lead instructor and facilitator for IXL Center's innovation management certification programs. At Hult, Hitendra teaches innovation and growth courses and is the director of the school's Action Learning Program.



**Ahmad Ashkar**

**Founder of Hult Global Case Challenge; Global Initiatives at IXL Center**

Ahmad is responsible for Global Initiatives at IXL Center where he also leads the management of the Global Case Challenge, a social entrepreneurship platform venture he created while in business school aimed at solving global socio-economic challenges. He is also a Founding Partner of American Ethos, LLC, a company dedicated to establishing the first socially responsible U.S. bank. Prior to joining the IXL Center, Ahmad played a key role in the introduction of multiple socially responsible and ethically based financial services and products to the American marketplace.



**Sabina Ciminero**

**Principal, IXL Center**

Sabina leads a number of IXL Center's major research and writing efforts. Prior to IXL Center, she wrote case studies at Harvard Business School and collaborated with IESE on the research and writing of a book on leadership. She worked in Global Equity Research at Putnam Investments and, more recently, had experience with a start-up hedge fund. Sabina has an MBA from the University of Chicago and a BA from Wellesley College.



**Tyler McNally**

**Partner, IXL Center**

Tyler works closely with IXL Center's clients to design and deliver innovation management capabilities building programs that combine blended learning instruction, workshops, coaching, and mentoring for executives and teams.



**Ronald Jonash**

**Partner, IXL Center**

Ron's specialties are the strategic management of innovation, technology, and R&D to create and capture maximum value. In addition, Ron is on the faculty of the Hult International Business School, and on the Advisory board of Arthur D. Little Inc.

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### About IXL Center



The Center for Innovation, Excellence and Leadership helps organizations to innovate and develop innovation management capabilities. We teach innovation and innovation management to thousands of corporate executives and MBA students around the world. IXL Center helps clients achieve bigger, bolder, better results more quickly and cost effectively through blended learning and action learning programs, its Certified Innovation Manager (CIM) program and collaborative research projects. IXL Center is a global community of innovation thought leaders and practitioners with offices in Boston, Dubai, Korea, London, Shanghai, São Paulo and Seoul.

